



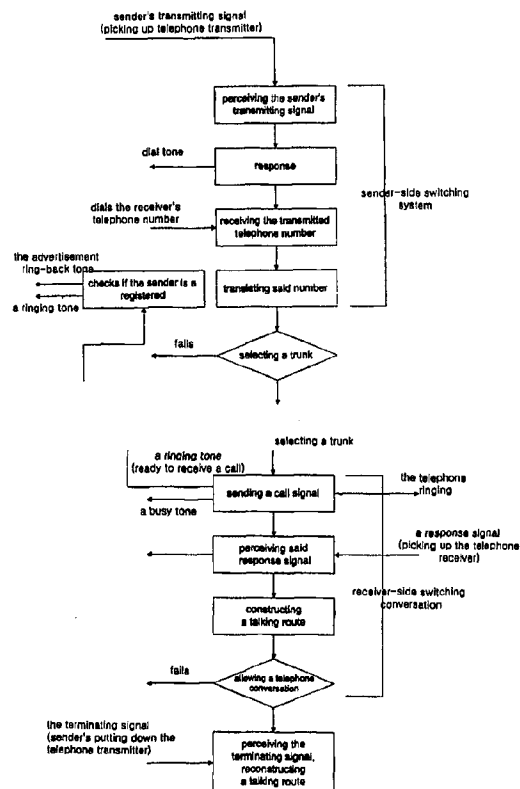
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: ADVERTISING METHOD BY USING RING-BACK TONE

## (57) Abstract

An advertising method by using a ring-back tone is provided. A controller employed in a sender-side switching system recognizes a sender's telephone number and a receiver's telephone number dialed at the sender's telephone set. Then the receiver's telephone number is transmitted to a receiver-side switching system at a calling stage. The receiver-side switching system checks the state of the receiver's telephone, e.g., ready or busy, and, subsequently, send, e.g., a ring-back tone in conformity to the state to the sender-side switching system. The sender-side switching system receives the ring-back tone. In case the ring-back tone is a busy tone, the sender-side switching system forwards the busy tone to the sender's telephone set. Otherwise, that is, the ring-back tone is a ringing tone which implies that the receiver's telephone is ready to receive a call, the sender-side switching system searches registered member information by consulting a database linked to the controller and checks if the receiver's telephone number matches a registered member in the database. If the sender is determined not to be a registered member, the sender-side switching system forwards the ring-back tone; otherwise, it sends a predetermined advertisement message stored in an advertisement memory to the sender's telephone set. If a response, e.g., a hook-off, from the receiver's telephone is perceived or if the sender terminates the call, the sender-side switching system stops the sending of the advertisement message.



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## ADVERTISING METHOD BY USING RING-BACK TONE

### Technical Field

5 The present invention relates to an advertising method by using a ring-back tone. More particularly, the present invention provides an advertising method wherein a ring-back tone in which an advertisement message or a campaign is stored is forwarded to the sender, instead of sending the usual ring-back tone that is heard upon dialing until the  
10 receiver answers the phone.

### Background Art

When a sender dials to communicate on a wired or a wireless telephone,  
15 the receiver hears the telephone ringing and picks up the telephone receiver. Here, about 3 to 10 seconds are usually taken until the receiver picks up the telephone after hearing the telephone ringing. During this period of time, the sender hears a signal sound which implies that a call signal is being transmitted to the receiver's telephone set.  
20 Such signal sound is called a ring-back tone, which is classified into a busy tone that represents the receiver's telephone is used at present and a ringing tone that represents the receiver's telephone is ready to receive a call. Various sounds can be used for ring-back tone depending on the type of telephone set or of switching system. However, it is

common that the general sound of telephone ring is used as a ringing tone so that the ringing tone can be distinguished from the busy tone.

The ring-back tone is selected from a memory, e.g. Rom which is installed in the switching system of a telephone office, to be transmitted to the sender. Accordingly, the sender only hears just one type of ring-back tone as far as Rom in the switching system is not changed.

Figures 1a and 1b represent the construction of the conventional switching system for a wired telephone. The detailed description of said switching system is as follows:

10 Subscribers' each telephone set is connected by wire to the subscriber board which consists of a subscriber interface circuit and an analogue/digital transducer, and said subscriber board is connected to a time switch. The switching system is equipped with a controller which controls each of the devices that comprise the switching system, e.g. the subscriber board or the time switch. A database is directly or indirectly  
15 linked to the controller for the purpose of storing information about the subscribers. The time switch is connected to a memory, Tone Rom, and is also connected to another switching system through a trunk.

Figs. 2a and 2b are block diagrams which show the conventional procedure  
20 of making a telephone call. First, as soon as the sender's transmitting signal (the sender's picking up the telephone transmitter) is perceived by the sender-side switching system, a dial tone which implies that the sender is allowed to dial the receiver's telephone number is forwarded, and the sender pushes dial buttons to transmit the receiver's telephone

number. When the sender-side switching receives the transmitted telephone number, it translates said number and tries to select a trunk. If the sender-side switching system fails to select a trunk, e.g. due to the telephone circuit shortage for overcrowding of telephone traffic, or  
5 damage of the telephone circuit, the sender is informed of impossibility of calling. If it successfully selects a trunk and is linked to the receiver-side switching system, the received telephone number is sent to the receiver-side switching system by the sender-side switching system. Then, the receiver-side switching system checks the status of the  
10 receiver's telephone set. If the receiver's telephone is busy, the receiver-side switching system forwards a busy tone to the sender. If it is ready to receive a call, the receiver-side switching system sends a call signal to the receiver's telephone set and at the same time, it also sends a ringing tone to the sender-side switching system. The sender-side  
15 switching system forwards said ringing tone from the receiver-side switching system, to the sender's telephone set. When the receiver picks up the telephone receiver after hearing the telephone ringing (response signal), the receiver-side switching system perceives the response signal and constructs a talking route to allow a telephone conversation.

20 In the case of a wireless telephone such as cellular phone or PCS, the same procedure as of the above wired telephone is experienced only except that a trunk receives the telephone number which is wirelessly transmitted by the wireless telephone and sends the number to the central controlling device in a wired or a wireless manner.

Meanwhile, the conventional advertising method by using telephone communication has already been disclosed in Korea and abroad. For example, the free call service is in operation in Korea, in which anyone can use a pay telephone free of charge after listening to advertisement message  
5 flowed from the pay telephone. That is, a predetermined telephone set is equipped with a device that is able to send an advertisement message, and when the customer is put through to the receiver, an advertisement message is heard for a few seconds. As a payment for listening to the advertisement message, the customer can use the telephone for free for  
10 some minutes. The similar free service system for wireless telephone is put into practical use in foreign countries. To be more specific, in case that a registered member who has already applied for the free service uses telephone, he or she is supposed to listen to advertisement messages in a periodic manner while communicating. In this way, the member can  
15 take the free call service for a predetermined period of time in compensation for listening to advertisement messages.

In the case of the conventional advertising method as above, however, the conversation between the sender and the receiver is forced to stop because the advertisement message is flowed out during conversation.  
20 Besides, there might be an inconvenience that the receiver hangs up the telephone owing to misunderstanding of line cross.

A company of over a certain scale would be able to have their own switching system and can air an advertisement for company's sake while the company operator puts a sender through to a receiver after receipt of

the sender's calling. However, in this advertising method, the scope of advertising target cannot avoid limitation because this method is carried out independent of the switching system of telephone office, and accordingly, a specific class of people, i.e. only those who have  
5 relation with the company can be the object for advertising.

### Detailed Description of Invention

The present invention has been invented to solve the problems as  
10 aforementioned, i.e. interruption of conversation, restriction of advertising target, and impossibility of advertising for non-connection calls. The objective of the present invention is to provide an advertising method by using a ring-back tone, wherein a subscriber can use the telephone more cheaply and the advertiser can obtain maximum  
15 effectiveness of advertising by virtue of the process in which the contents to be advertised are downloaded from a server, stored in the switching system, and sent to the registered member as a ring-back tone.

With the above objectives and construction, the present invention never causes damage to the receiver because the advertising is performed ahead  
20 of connection of the call, and secures the continuity of conversation since the advertisement message is never heard during conversation, thereby providing the subscribers with freedom of choice according to their interest and membership registration. In addition, the present invention can be applied to any telephone set which uses the switching

system in a telephone office so that the scope of advertising target can be said limitless. Moreover, a registered member can use telephone more cheaply by listening to advertisement messages, instead of feeling bored with the conventional ring-back tone.

5

### Brief Description of Drawings

Figs. 1a and 1b are conceptual diagrams that show the construction of the switching system for conventional wired telephone.

10 Figs. 2a and 2b are block diagrams that represent the conventional procedure for connecting a telephone call.

Figs. 3a and 3b are block diagrams that represent the procedure for connecting a telephone call according to the first embodiment of the present invention.

15 Figs. 4a and 4b are block diagrams that represent the procedure for connecting a telephone call according to the second embodiment of the present invention.

### Optimized Construction for Embodiment of Invention

20

In order to achieve the above objectives, in the present invention, the sender-side switching system receives a dial signal that is generated when the sender pushes a telephone number, recognizes the sender's telephone number and the receiver's telephone number, and transmits the



receiver's telephone number to the receiver-side switching system. Then, the sender-side switching system continues to recognize the ring-back tone which the receiver-side switching system forwards after receipt of said receiver's telephone number. If the ring-back tone is a busy tone, 5 the sender-side switching system sends the busy tone to the sender's telephone set. Otherwise, i.e. if the ring-back tone is a ringing tone which implies that the receiver's telephone set is ready to receive a call and a call signal is being sent, then, the sender-side switching system compares the sender's telephone number with the registered member 10 information stored in the database. If the sender is determined not to be a registered member, the sender-side switching system forwards said ringing tone as it is to the sender's telephone set; otherwise, it sends a predetermined advertisement message stored in an advertisement memory to the sender's telephone set. Then, if a response, e.g. a hook-off, from 15 the receiver's telephone is perceived or if the sender terminates the call, the sender-side switching system stops sending the advertisement message.

The above advertising method can be applied to a wireless telephone as well as the wired one because the sole difference between wired and 20 wireless system lies in the process in which the telephone set transmits dialed information to the switching system. That is, said process is carried out in a wired fashion in the wired system while the same is performed in a wireless manner in the wireless system.

Figs. 3a and 3b are block diagrams made out on the basis of the above

description. The more detailed description will be given below with reference to Figs. 3a and 3b.

First, as soon as the sender picks up the telephone transmitter, the transmitting signal is forwarded to the sender-side switching system.

5 Then, the sender-side switching system returns the sender a dial tone which implies that the receiver's telephone set is ready to receive a dialed information. The sender hears this dial tone and dials the receiver's telephone number to send it to the sender-side switching system. After receiving the transmitted telephone number, the sender-side  
10 switching system selects a trunk so as to link to such switching system as directs received telephone numbers (i.e. the receiver-side switching system). If the sender-side switching system fails to select a trunk, e.g. due to telephone circuit shortage or damage, the sender-side switching system forwards the sender a signal which implies that the call cannot be  
15 connected.

If a trunk is successfully selected and the sender-side switching system is linked to the receiver-side switching system, said receiver-side switching system is given the receiver's telephone number, and then, checks the status of the receiver's telephone set. If the receiver's  
20 telephone is busy, the receiver-side switching system forwards a busy tone to the sender-side switching system; otherwise, it sends a call signal to the receiver's telephone set and forwards the sender-side switching system a ringing tone which implies that a call signal is being sent to the receiver's telephone set. In case that the ring-back tone is

a busy tone, the sender-side switching system forwards the busy tone as it is to the sender's telephone set. If the ring-back tone is a ringing tone, the sender-side switching system searches the registered member information by consulting the database linked to the controller. If the sender's telephone number is determined to be one of a registered member, the sender-side switching system chooses an appropriate advertisement message stored in an advertisement memory, depending on the sender's age, sex, or interest, and sends it to the sender's telephone set; if the sender is not a registered member, the ringing tone that is received from the receiver-side switching system is forwarded to the sender's telephone set. From this point of time, the sender is supposed to listen to some predetermined advertisement messages until the receiver picks up the telephone or the sender himself (or herself) terminates the call. Thereafter, if a response signal of the receiver's telephone set (receiver's picking up the telephone receiver) is transmitted from the receiver's switching system, or if the terminating signal of the sender's telephone set (sender's putting down the telephone transmitter) is perceived, the sender-side switching system stops sending advertisement messages. In other words, when the receiver picks up the telephone receiver after hearing the telephone ringing (response signal), the receiver-side switching system perceives said response signal and forwards it to the sender-side switching system. Then, the sender-side switching system stops sending advertisement ring-back tone and constructs a talking route to allow a telephone conversation.

In order to achieve the above objectives, the present invention provides another method of advertising, wherein the advertisement ring-back tone is stored in the receiver-side switching system. To be more specific, it follows the steps below:

- 5 The sender-side switching system receives a dialed information transmitted from the sender's telephone set, recognizes both telephone numbers of the sender and the receiver, and checks if the sender is a registered member by comparing the sender's telephone number with the member information registered in the database. Then, the sender-side  
10 switching system forwards the receiver's telephone number and the result of searching the database to the receiver-side switching system. The receiver-side switching system checks the status of the receiver's telephone set. If the receiver's telephone is busy at present, it sends a busy tone to the sender-side switching system; otherwise, it sends a call  
15 signal to the receiver's telephone set. And, if the sender is not a registered member, a ringing tone is sent to the sender-side switching system; otherwise, i.e. if the sender is a registered member, an advertisement ring-back tone chosen from the advertisement memory is transmitted to the sender-side switching system. The sender-side  
20 switching system forwards the received ring-back tone as it is to the sender's telephone set. Transmission of the advertisement ring-back tone is stopped when a response signal is sent from the receiver-side switching system or when the sender terminates the call.

Figs. 4a and 4b are block diagrams representing the above steps. When the

transmitting signal of the sender (picking up the telephone transmitter) is perceived by the sender-side switching system, a dial tone which implies that it can normally receive a dial signal is forwarded to the sender's telephone set. Then, the sender pushes dial buttons to send the receiver's telephone number. The sender-side switching system checks if the sender is a registered member or not by comparing the sender's telephone number with the member information stored in the database linked to the controller. The sender-side switching system continues to choose a trunk in order to link to a switching system which deals with received telephone numbers (the receiver-side switching system). If the sender-side switching system fails to select a trunk, it forwards the sender a signal that the call cannot be connected. When the sender-side switching system successfully selects a trunk, it sends the receiver's telephone number and the result of searching database to the receiver-side switching system. The receiver-side switching system checks the status of the receiver's telephone set. If the receiver's telephone set is busy, the receiver-side switching system sends a busy tone to the sender-side switching system; otherwise, it forwards a call signal to the receiver's telephone set with sending a ringing tone to the sender-side switching system in case that the sender is not a registered member. If the sender is determined to be a member, the receiver-side switching system sends an advertisement ring-back tone to the sender-side switching system. The sender-side switching system transmits the received advertisement ring-back tone to the sender with no alteration.

Subsequently, if a response signal is sent from the receiver's telephone set (the receiver's picking up the telephone receiver) or if the sender terminates the call (the sender's putting down the telephone transmitter), the sending of advertisement ring-back tone is stopped. In other words,  
5 when the receiver hears the telephone ringing and picks up the telephone receiver (response signal), the receiver-side switching system perceives the response signal and sends it to the sender-side switching system. Then, the sender-side switching system stops sending the advertisement ring-back tone to construct a talking route, thereby allowing the sender  
10 to be connected to the receiver.

According to the present invention as described above, the sender comes to hear an advertisement ring-back tone while the receiver's telephone is ringing; in this connection, the sender might feel uncomfortable as he or she cannot be sure that the receiver's telephone is ringing. Accordingly,  
15 where the case may require, the present invention can afford to employ a method which can settle such problem by sending the conventional ringing tone as background sound while the advertisement ring-back tone is ringing.

The advertisement ring-back tone used in the present invention, which is  
20 provided in the form of an advertisement message or a campaign, can be stored in various memories.

First, ROM can be used. ROM in the conventional switching system has only a few kinds of predetermined ring-back tone and such ROM can be replaced with another ROM that has a variety of ring-back tones. Particularly, for

such advertisement as can always be advertised without restriction of term, i.e. without a predetermined period, for example, three months or seven months for changing the advertisement contents depending on the seasons, ROM is preferably used. However, in the light of the characteristic features of the present invention, the advertisement contents have to be changed whenever needed, and in that case, ROM should keep exchanged depending on the advertisement contents if the conventional ROM is used. As a result, inconvenience and economic problems are much likely to be caused. Thanks to the latest technology, however, it is possible to erase and re-write the contents in ROM like in RAM so that ROM is possibly be used in the present invention.

Second, there is a RAM. RAM can be said far more advantageous for the present invention because, as aforesaid, the contents of the ring-back tone should keep changed in the present invention.

Third, a magnetic tape on which an advertisement message or a campaign is recorded can be used. In case of using an analogue magnetic tape, an analogue/digital transducer should be interposed in the middle. However, the magnetic tape is of no practical use since it takes longer time than other media to analyze the contents of the tape.

Fourth, there is a method of connecting a hard disk. A hard disk takes longer time than ROM or RAM to read the contents stored therein but it may be an advantageous medium for it has much larger capacity than ROM or RAM.

In order to apply the present invention, the database and the

advertisement memory in the switching system need to be managed. The registered member information in the database in the switching system, e.g. member's telephone number, name, age, sex, or interest, can be managed by directly operating the computer mounted in the switching  
5 system. This method, however, is hardly possible to employ in view of cost and time, for it has a weak point that each of the switching systems of telephone offices in the whole country should be managed in an individual manner. Therefore, it is desirable to build a server out of each switching system and manage the member information database in the  
10 switching system in a wired or a wireless fashion. As for the problem of changing the advertisement contents of ROM, RAM, a hard disk or a magnetic tape, as the advertisement contents may be diversified according to time, area, or the member's profile, etc., a database in which a variety of advertisement contents are stored is constructed and  
15 controlled by a server. Then, whenever needed, the advertisement contents can be downloaded by directly, or through the telephone line, connecting the server to the memory mounted in each switching system.

In addition, the present invention can be applied to a cellular phone or a PCS phone. To elaborate, the technologies utilized in a wireless phone  
20 contain the technology for a wired phone plus installation of a base station, wireless connection to the subscriber (sender or receiver) 's terminal from the base station, and the technology of making said connection as smooth as can be; therefore, it is possible to apply the same advertising method as above, i.e. the advertising method by using a



ring-back tone for a wired telephone, to a wireless telephone. Moreover, the effectiveness of advertisement convergency can be far more increased because a specific cellular phone belongs to a specific individual. In other words, a wired telephone is used by different people with different  
5 interests so that its user may often not be a right target for a specific advertisement. However, as far as the cellular phone users are concerned, it is possible to select, with an accurate database, a right person for a specific advertisement, thereby achieving higher effectiveness of advertising. The effectiveness of advertising by using a ring-back tone  
10 can be maximized for a wireless telephone in view of the fact that the wireless telephone usually consumes more time than a wired telephone for connecting the sender to the receiver.

15

20

## CLAIMS

1. An advertising method by using a ring-back tone, which comprises the steps that:
- 5 the sender-side switching system recognizes sender's telephone number and receiver's telephone number after receiving a dial signal generated from the sender's telephone set;
- said receiver's telephone number is transmitted to the receiver-side switching system;
- 10 the sender-side switching system recognizes a ring-back tone that the receiver-side switching system sends after receipt of the receiver's telephone number;
- if said ring-back tone is a busy tone, the busy tone is forwarded to the sender's telephone set, and if said ring-back tone is a ringing tone
- 15 which implies that a call signal is being sent to the receiver's telephone set, the registered member information stored in database are searched to check if the sender's telephone number matches the registered member in the database; if the sender is determined not to be a registered member, said ringing tone, as it is, is forwarded to the
- 20 sender's telephone set, and if the sender is determined to be a member, a predetermined advertisement ring-back tone is selected from the advertisement memory and sent to the sender's telephone set; and,
- if a response signal of said receiver's telephone is transmitted from the receiver-side switching system or if the sender terminates the call, the

sending of said advertisement ring-back tone is stopped.

2. An advertising method by using a ring-back tone according to Claim 1, wherein the memory in which said advertisement ring-back tone is stored  
5 is one selected from ROM, RAM, a hard disk, or a magnetic tape that is connected to an analogue/digital transducer.

3. An advertising method by using a ring-back tone, which comprises the steps that:

10 the sender-side switching system recognizes sender's telephone number and receiver's telephone number after receiving a dial signal generated from the sender's telephone set;

the sender-side switching system checks if the sender is a registered member by comparing the sender's telephone number with the registered

15 member information stored in database;

the sender-side switching system forwards the receiver's telephone number and the result of searching the database to the receiver-side switching system;

the receiver-side switching system checks the status of the receiver's  
20 telephone set; if the receiver's telephone is busy, the receiver-side switching system sends a busy tone to the sender-side switching system; otherwise, the receiver-side switching system sends a call signal to the receiver's telephone set; if the sender is not a registered member, the receiver-side switching system sends a ringing tone to the sender-side

switching system, and if the sender is a registered member, the receiver-side switching system selects an advertisement ring-back tone from the advertisement memory and sends the same to the sender-side switching system; the sender-side switching system forwards the received ring-back  
5 tone to the sender's telephone set; and,  
if a response signal of the receiver's telephone is transmitted from the receiver-side switching system or if the sender terminates the call, the sending of said advertisement ring-back tone is stopped.

- 10 4. An advertising method by using a ring-back tone according to Claim 3, wherein the memory in which said advertisement ring-back tone is stored is one selected from ROM, RAM, a hard disk, or a magnetic tape that is connected to an analogue/digital transducer.

15

20

## Sender-side switching system

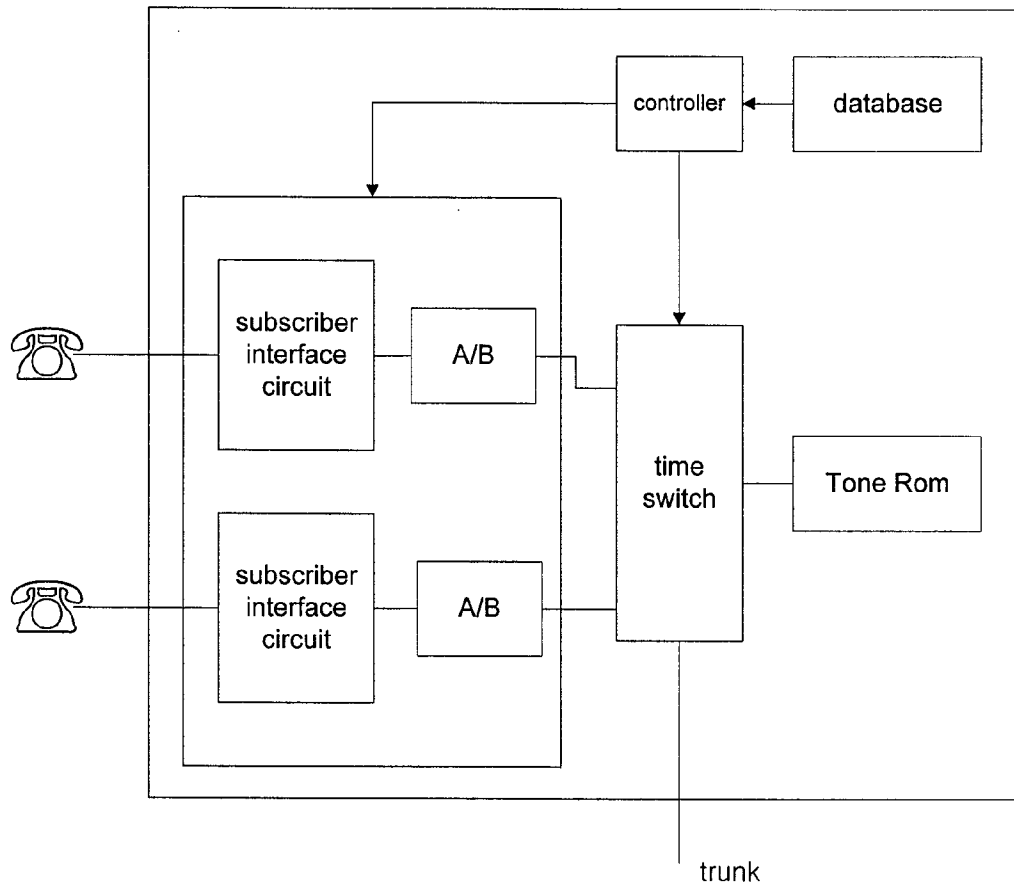


Fig 1a.

## Receiver – side switching system

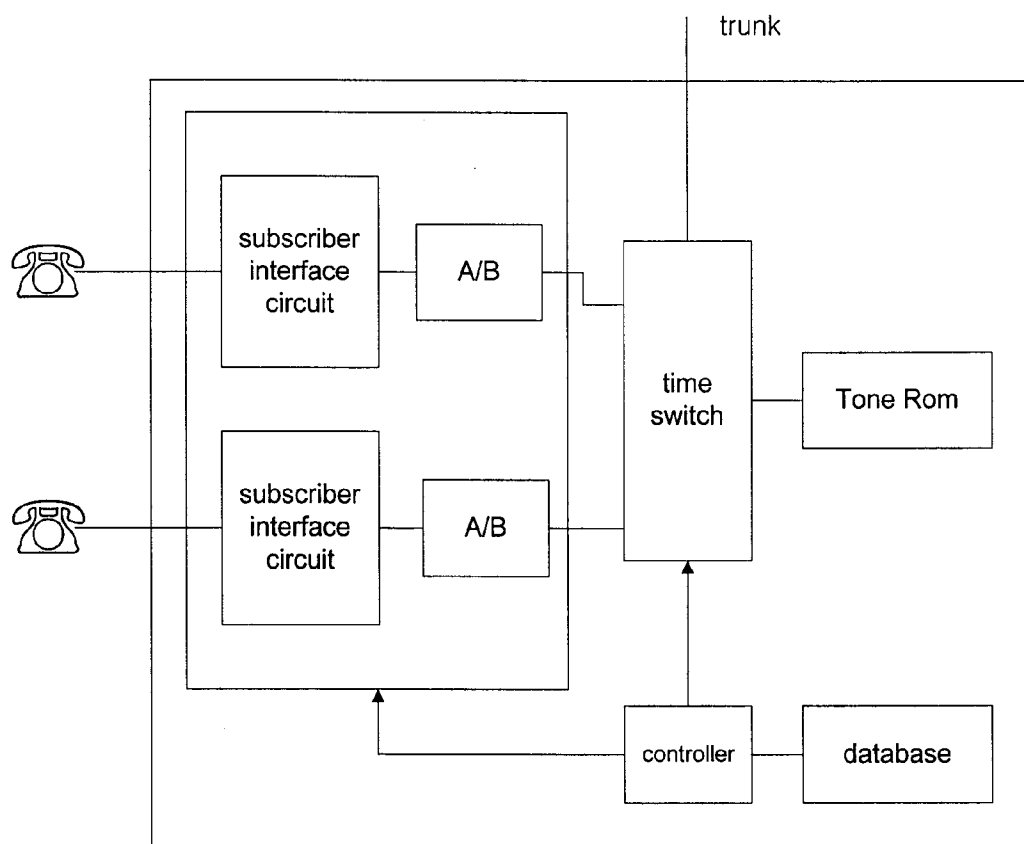


Fig 1b

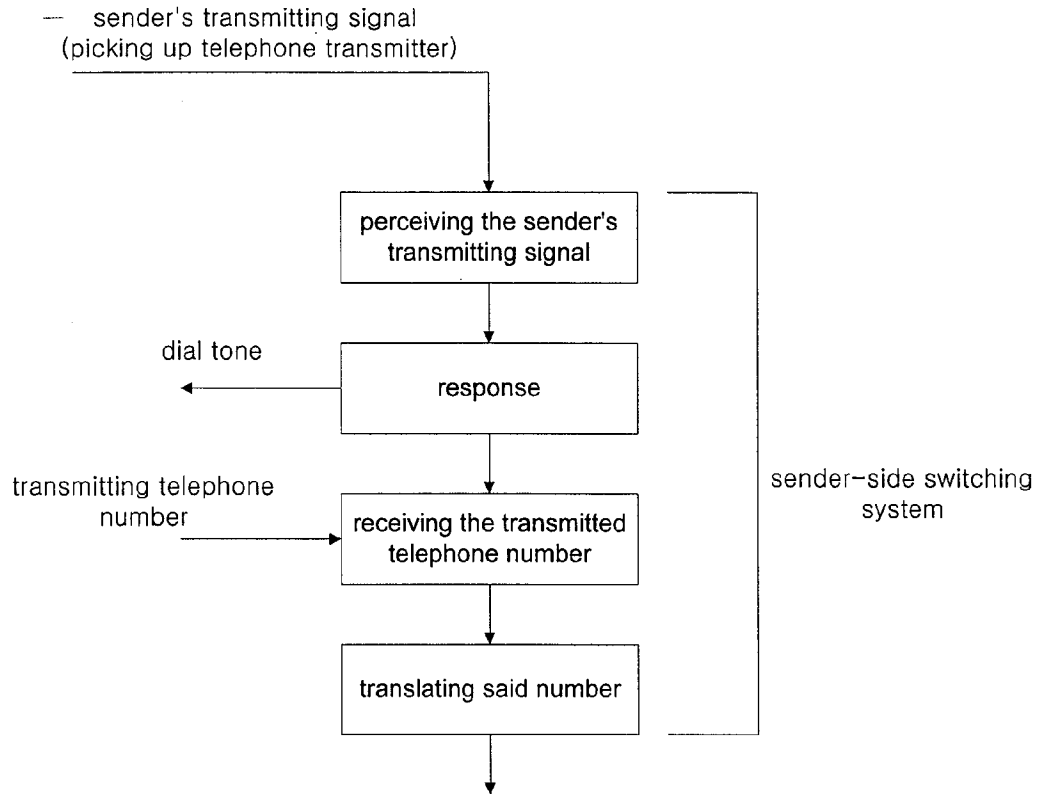


Fig 2a.

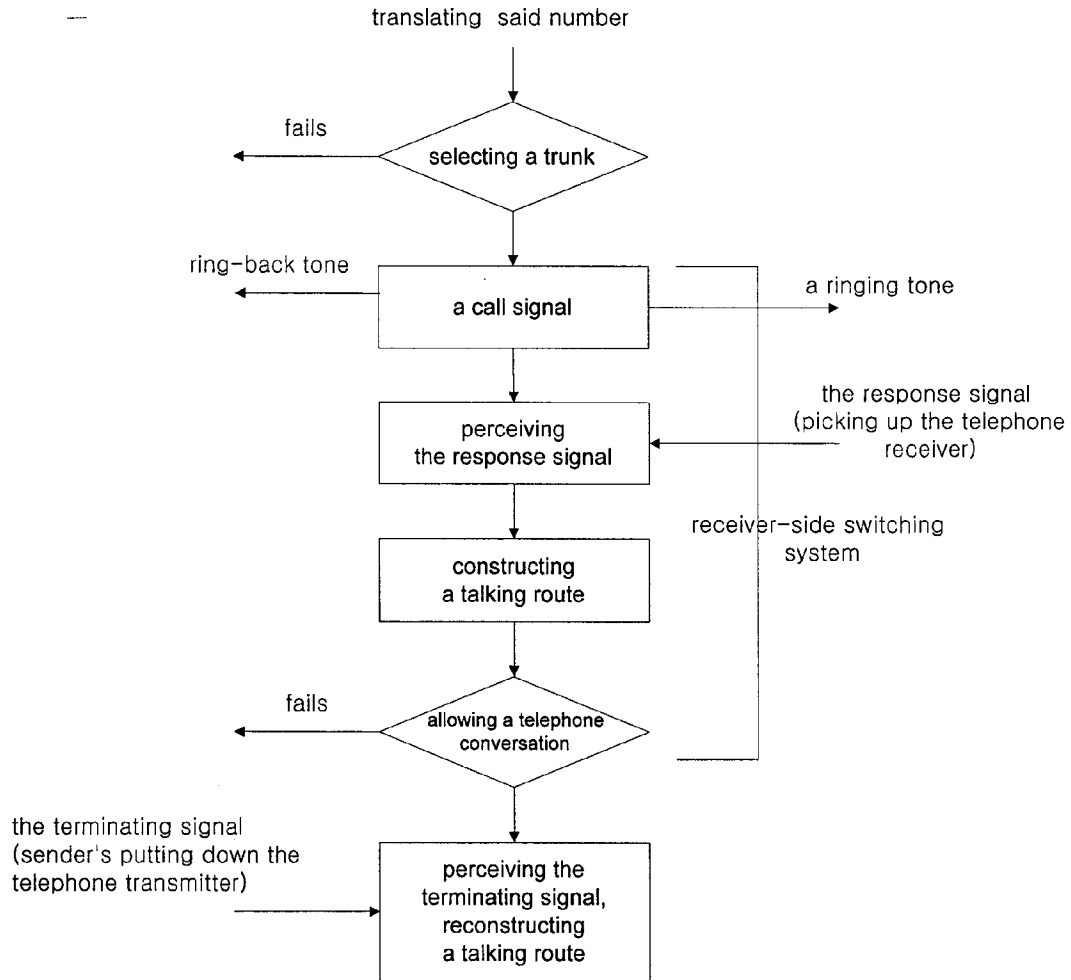


Fig 2b



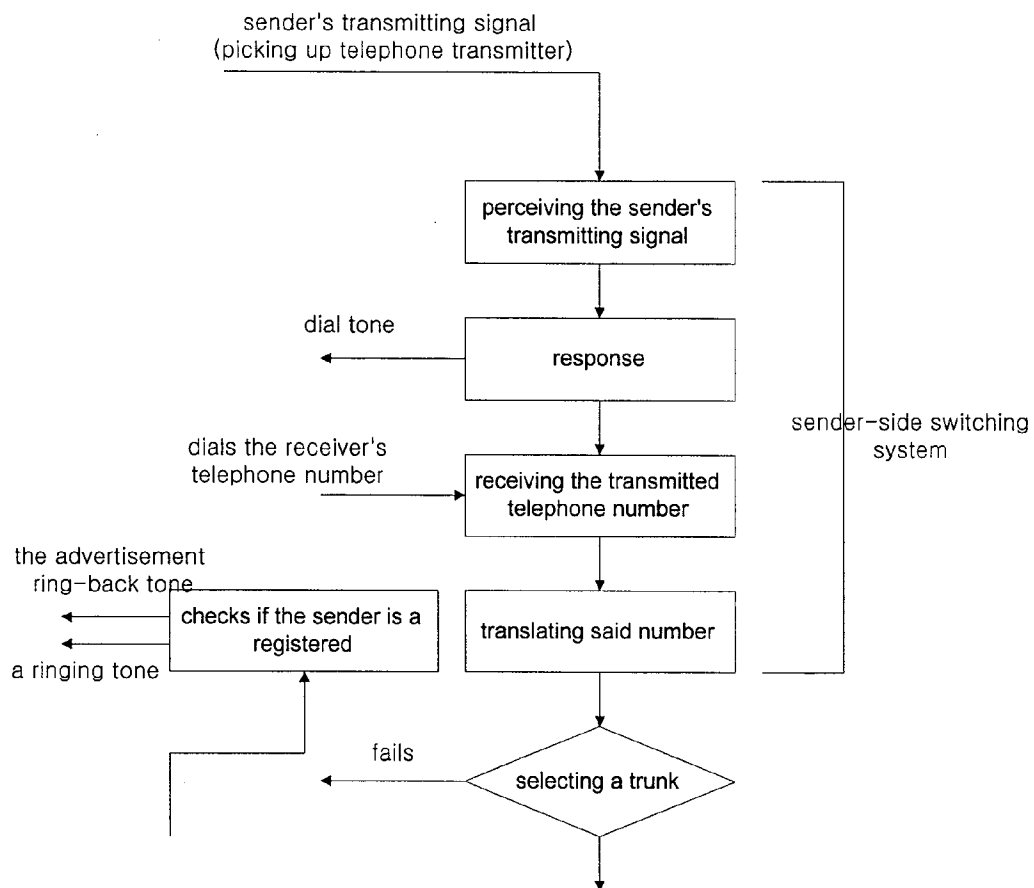


Fig 3a.

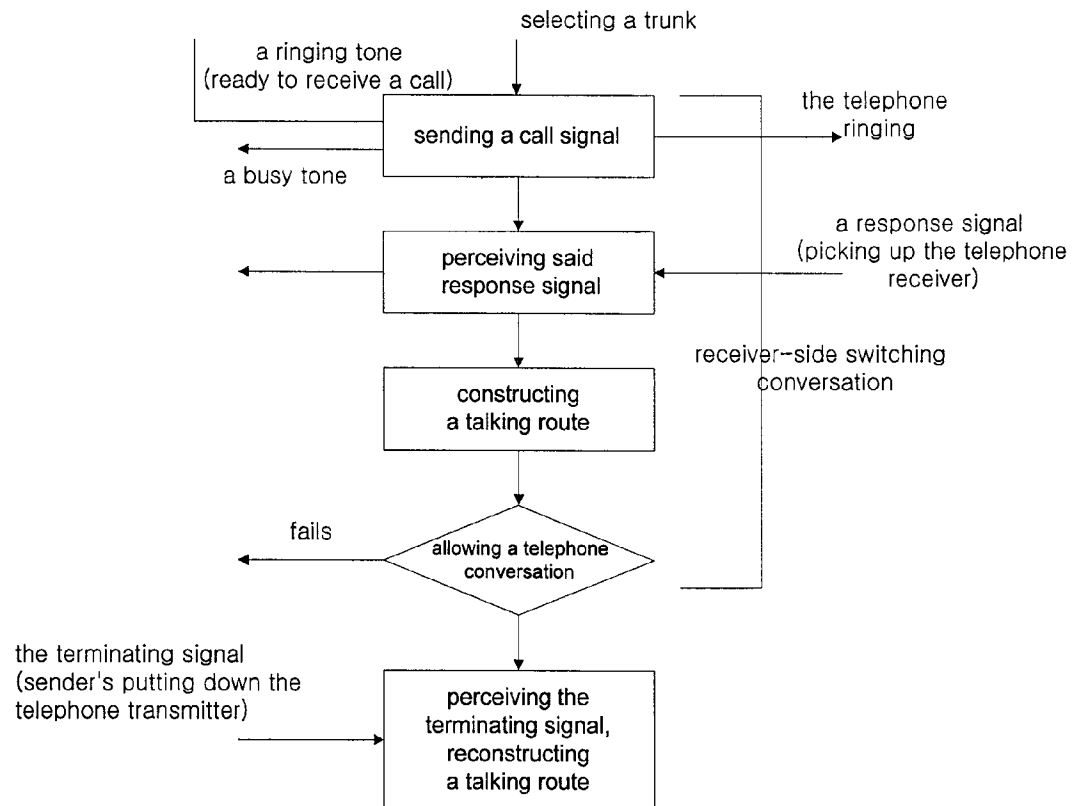


Fig 3b.

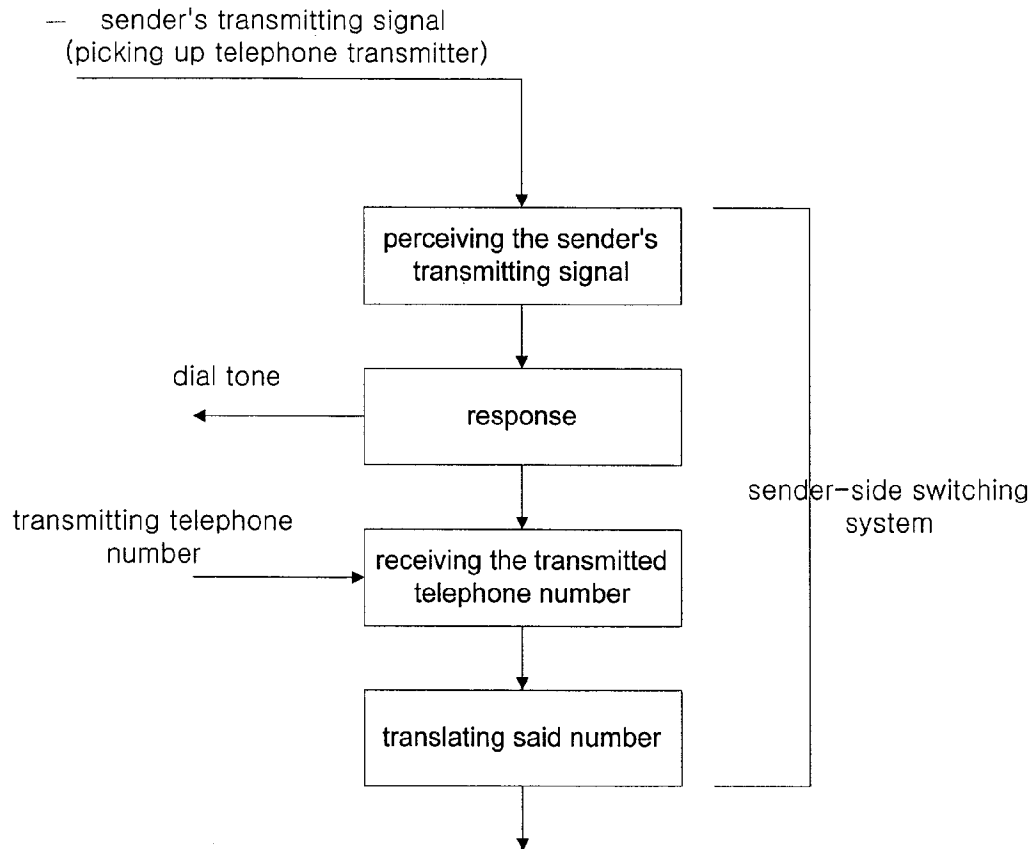


Fig 4a.

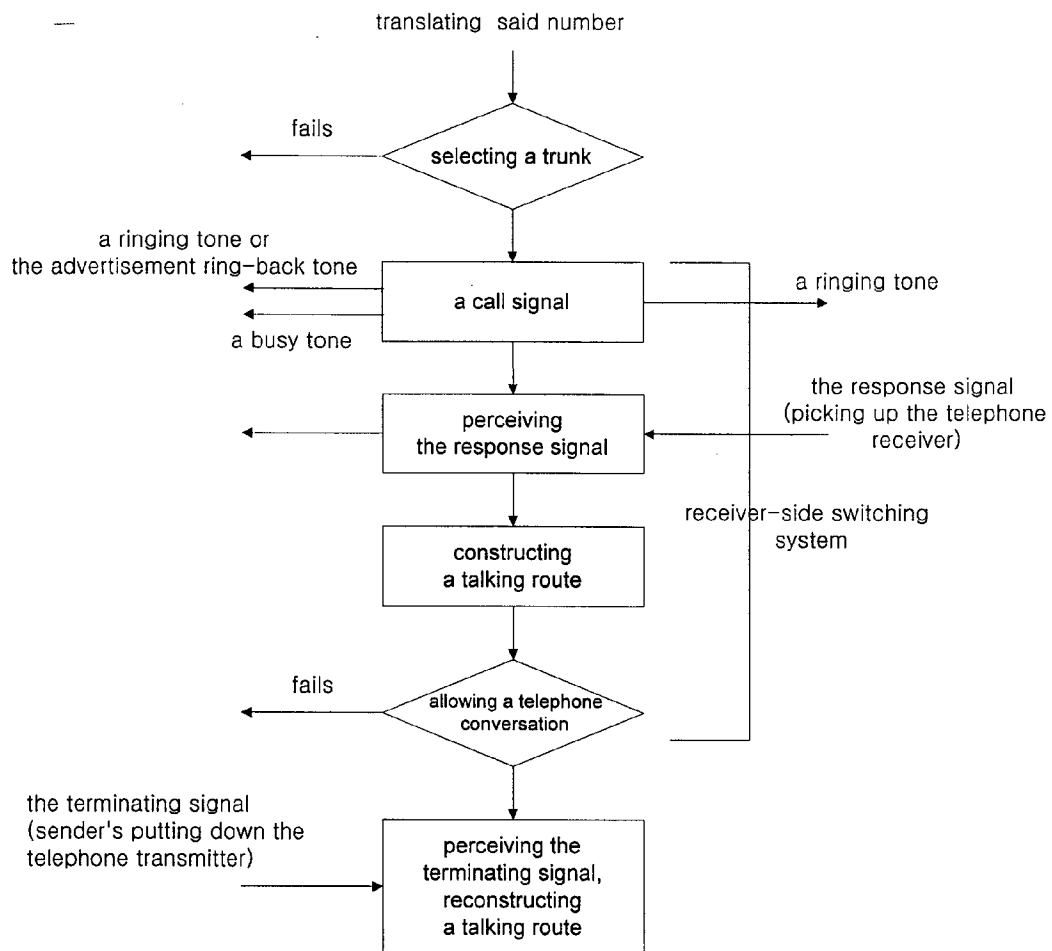


Fig 4b.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR00/00131

**A. CLASSIFICATION OF SUBJECT MATTER****IPC7 H04M 3/42**

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS-SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC7 H04M3/42, H04M17/02, H04M3/493

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

IBM Intellectual Property Network (telephone\* and advertis\*, exchange\* and announc\* and memor\*)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|-----------------------|
| A         | US 4823374(Siemens Aktiengesellschaft)<br>abstract, claim                          | 1-4                   |
| A         | US 5774534(AT&T Corp)<br>abstract, claim   | 1-4                   |
| A         | US 5793851<br>abstract   | 1-4                   |

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

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"&amp;" document member of the same patent family

Date of the actual completion of the international search

26 APRIL 2000 (26.04.2000)

Date of mailing of the international search report

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